L 02460-67 EWT(1)/EWT(m) GW

ACC NR: AT6028957 (N) SOURCE CODE: UR/2566/66/082/000/0032/0034

AUTHOR: Patin, S. A.; Aleksandrov, A. V.; Orlov, V. M.

ORG: none

42
B+1

TITLE: Strontium-90 on the Atlantic Ocean surface in the second half of 1961

SOURCE: AN SSSR. Institut okeanologii. Trudy, v. 82, 1966. Issledovaniya radioaktivnoy zaryaznennosti vod mirovogo okeana (Investigations of radioactive contamination of waters of the oceans), 32-34

TOPIC TAGS: RADIOISOTOPE, nuclear radiation, strontium, ocean radioactivity, radioactive fallout, radioactivity / ATLANTIC OCEAN

ABSTRACT: The article deals with the results of determinations of Sr^{90} concentration in the surface waters of the Atlantic Ocean during the 11th cruise of the R/V Mikhail Lomonosov. It was found that the concentration of Sr^{90} in September—November 1961 was the same as observed in previous years. No significant changes in Sr^{90} concentration in the surface layer of ocean, related to latitude, were found in either hemisphere. Orig. art. has: 1 figure and 1 table. [LB]

SUB CODE: 18, 08/ SUBM DATE: none/ ORIG REF: 005/

Card 1/1 LC

ALEKSANDROV, A.V., inzh.

Propeller characteristics of hydrofoil boats. Trudy LIVT no.72:53-57 '64. (MIRA 18:10)

ALEKSANDROV, A.V.

Calculating nonsteady regimes of the simultaneous performance of a compressor station and gas pipeline sections adjacent to it. Gaz. delo no.7:19-23 '65. (MIRA 18:9)

1. Gosudarstvennyy proizvodstvennyy komitet po gazovoy promyshlennosti SSSR.

ALEKSANDROV, A.V., kand.tekhn.nauk, dotsent (Moskva)

Calculating box-shaped beam spans by a transposition method. Issl. po teor. sooruzh. no.14:209-213 '65. (MIRA 18:10)

ALEKSANDROV, A. V.

"Individual Endeavor - A New Method for Improving the Engineering and Technical Qualifications of Workers," Vest. Svyazi-Elektrosvyaz', No.7, 19[illegible]

ALEKSANDROV, A. V.

PA 164T9

USSR/Electric Power - Turbogenerators Turbines, Gas — Jun 50

"Use of Gas-Pressure Drops in Turboelectric Generators," A. V. Aleksandrov

"Energet Byul" No 6, pp 18-24

Use by turboelectric generators of pressure drops of natural gas during its extraction and pipeline flow to obtain electric power was first suggested by Prof M. D. Millionshchikov and Engineers P. A. Stron, A. A. Degterev, and G. M. Ryabinkov in 1948. Aleksandrov lays down theoretical principles used in calculating power of gas turbine

164T9

USSR/Electric Power - Turbogenerators (Contd) — Jun 50

used as natural-gas pressure regulator in gas main, and describes experiments on GT constant-pressure gas turbine used in contemporary aviation. Concludes turboelectric generators can use gas-pressure drops to produce electric power and at same time act as substitute for usual gas-pressure regulators in gas mains.

164T9

ALEKSANDROV, A. V.

ALEKSANDROV, A. V.: "Investigation of the stability of skeleton systems using the power-engineering method". Moscow, 1955. Min Railways USSR. Moscow Order of Lenin and Order of Labor Red Banner Inst of Railroad Engineers imeni I. V. Stalin, Chair of "Structural Mechanics". (Dissertations for the degree of Candidate of Technical Sciences.)

SO: Knizhnaya Letopis' No. 50 10 December 1955. Moscow.

ALEKSANDROV, A.

"To Boost the Rate of the Gas Industry Development," Pravda, No.189, 8 July 1955.

Chief Engineer, Glavneftegaz

Summary D 332103, 18 Oct 55

ALEKSANDROV, A.V.

Gas industry in the countries of Western Europe. Gaz.prom.no.2:37-40 F '56. (MIRA 10:1)

(Europe, Western--Gas manufacture and works)

ALEKSANDROV, A.V.

Installations for producing city gas in Western Europe. Gaz.prom. no.4:31-36 Ap '56. (MLRA 10:1)
(Europe, Western--Gas manufacture and works)

ALEKSANDROV, A.V.

4808. OPERATION OF A GAS TURBINE POWER STATION ON NATURAL GAS IN BUCHAREST. Aleksandrov, A.V. (Energ. Byull. Minist. Neft. Prom. (Pwr Bull. Minist. Oil, Moscow), July 1957, 26-31). An account of the Brown Boveri 10 MW plant in the Filaret power station. It comprises high and low pressure combustion chambers, a high pressure turbine driving a high pressure compressor, and a low pressure turbine driving both a low pressure turbine and an alternator. Troubles with explosions in combustion chambers have been met by increasing the time for starting up to 25-30 min, and with breaking of compressor blades by the makers installing thicker blades. (L).

ALEKSANDROV, A.V.

Session of the Special Working Group on Gas of the Economic Commission for Europe of the U.N.O. Gaz.prom. no.5:35-36 My '57. (MLRA 10:5)

(Gas manufacture and works) (United Nations--Commissions)

ALEKSANDROV, A.V.

.11(4) PHASE I BOOK EXPLOITATION SOV/1868

Nauchno-tekhnicheskoye obshchestvo neftyanoy promyshlennosti

Puti razvitiya gazovoy promyshlennosti SSSR; materialy Vsesoyuznogo soveshchaniya (Trends in the Development of the Gas Industry in the USSR; Materials Presented at the All-Union Conference) Moscow, Gostoptekhizdat, 1958. 432 p. 3,000 copies printed.

Eds: A.B. [illegible], B.S. [illegible], P.S. [illegible], Yu.A. [illegible], V.I. Popov, V.M. [illegible], N.I. [illegible], P.A. [illegible], A.S. Bal'[illegible]; Exec. Eds.: E.I. [illegible] and N.N. [illegible]; Tech. Ed.: E.A. Mukhina; Editorial Board: N.V. [illegible] (Chief Ed.), K.S. [illegible], Yu.A. [illegible], V.M. [illegible], and N.I. [illegible].

PURPOSE: The book is intended for specialists engaged in the production and gathering of natural gas, the extraction of gas from coal and shale, the construction and operation of trunk gas pipelines, gas supply to cities, and the processing of gas.

Card 1/11

COVERAGE: The authors review the basic trends in the development of the USSR gas industry, the prospecting and exploration of new gas deposits, the gasification of solid fuels, the gathering and utilization of natural gas, the automation of gas field operations, the exploitation of gas wells, and ways to increase output. They further discuss the processing of natural gas with application of refrigeration, the experience gained in the laying and operating of trunk gas pipelines, the automation of gas pipeline operation, and underground gas storage facilities. There are no references.

TABLE OF CONTENTS:

Trends in the Development of the Gas (Cont.) SOV/1868

Card 3/11

ALEKSANDROV, A.V.

Utilizing the excess reservoir pressure of natural gas during recovery and pipeline transportation to distant points. Gaz. prom. 4 no.6:38-42 Je '59. (MIRA 12:8)
(Gas, Natural)

ALEKSANDROV, A. V., BARABASH, B. V. and KHODANOVICH, I. E.

"Calculation of Pipelines and the Prerequisites for Choosing Optimum Gas Transmission Conditions."

report presented at the Eighth International Gas conference at Stockholm, 28 30 Jun 61

ALEKSANDROV, A.V.; BARABASH, B.V.; KHODANOVICH, I.Ye.

Calculation of gas pipelines and the premises for selecting optimum conditions for gas pipelining. Gaz. prom. 6 no.6:17-23 '61. (MIRA 14:9)

(Gas, Natural--Pipelines)

SIDORENKO, M. V.; ALEKSANDROV, A. V.; KHALATIN, N. I.

"Operation of the largest system of gas supply and its work during peak load periods (on the example of Moscow system of gas mains)."

Report to be submitted at the 9th Intl. Gas Conference, Hague, 1-4 Sept 1964.

SOROKIN, A.I., red.; ALEKSANDROV, A.V., red.; KLIMUSHIN, A.M., red.; KOPYTOV, V.F., red.; TREBIN, F.A., red.; TURKIN, V.S., red.; CHERNYAK, L.M., red.; SOROKIN, A.I., red.; ZUBAREVA, Yelena Ivanovna, ved. red.; SOLGANIK, Grigoriy Yakovlevich, ved. red.; POLOSINA, A.S., tekhn.red.

[Techniques used in the gas industry of foreign countries] Zarubezhnaia tekhnika gazovoi promyshlennosti; doklady. Moskva, Gostoptekhizdat, 1963. 386 p. (MIRA 17:2)

1. International Gas Congress. 7th, Stockholm. 1961.

ALEKSANDROV, A.V.; DOBROKHOTOV, V.D.

Evaluating the efficiency of the operation of the compressor stations of gas pipelines. Gaz. prom. 8 no.1:[illegible]-[illegible] '6[illegible]
(MIRA 1[illegible])

SIDORENKO, M.V.; ALEKSANDROV, A.V.; KHALATIN, V.I.

Operating a large gas-supply system. Gaz. prom. 9 no.8:5-10 '64.
(MIRA 17:9)

KORTUNOV, A.K.; KORSHUNOV, Ye.S.; KUZNETSOV, P.L.; BARABASH, B.B.; PROMTOV, A.I.; SHAKIROV, M.Z.; ALI-ZADE, M.A.; KHODZHAYEV, A.K.; ALEKSANDROV, A.V., red.

[Gas industry in the U.S.A.] Gazovaia promyshlennost' SShA. Moskva, Nedra, 1964. 339 p. (MIRA 18:9)

ALEKSANDROV, A.V.

Phonocardiogram in hypertension. Kardiologiia 4 no.6:83-84 N-D '64.
(MIRA 18:8)

1. Kafedra gospital'noy i fakul'tetskoy terapii pediatricheskogo fakul'teta (zav. - prof. P.N.Yurenev) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

ALEKSANDROV, A.V., dotsent; RYBIN, V.D., inzh.

Determining the forces in suspension supports of spans of the "arch with tie-beam" type. Trudy MIIT no.187:63-88 '64. (MIRA 18:7)

ALEKSANDROV, A.V.; LASHCHENIKOV, B.Ya. (Moskva)

Use of the power method when solving problems of the stability of elastic systems. Stroi.mekh. i rasch.soor. 7 no.5:28-32 '65.

(MIRA 18:10)

ALEKSANDROV, A.V.

Upper Paleozoic coal accumulation in the eastern margin of the Tunguska Basin. Geol.i geofiz. no.7:55-69 '61. (MIRA 14:9)

1. Yakutskiy filial Sibirskogo otdeleniya AN SSSR.
(Tunguska Basin--Coal geology)

ALEKSANDROV, A. V.

Dissertation defended for the degree of Candidate of Geologo-Mineralogical Sciences at the Joint Academic Council on Geologo-Mineralogical, Geophysical, and Geographical Sciences; Siberian Branch

"Main Features of the Upper-Paleozoic Sedimentation and Coal-Accumulation Along the Eastern Limit of the Tungusskiy Basin."

Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

ALEKSANDROV, A.V.; FROLOV, V.I.

Conditions of the Upper Paleozoic accumulation of sediments and coal formation in the eastern margin of the Tunguska Basin. Nauch.soob. IAFAN SSSR no.7:59-66 '63. (MIRA 16:3)

(Tunguska Basin—Coal geology)

YEROSHCHEV-SHAK, V.A.; ALEKSANDROV, A.V.

Methods for excluding clay minerals from bottom sediments.
Trudy Mor.gidrofiz.inst. AN URSR 28:108-111 '63. (MIRA 17:3)

L 27506-66 EWT(d)/EWT(m)/EWP(f)/T-2

ACC NR: AT6004453 (N) SOURCE CODE: UR/3188/64/000/072/0053/0057

AUTHOR: Aleksandrov, A. V. (Engineer)

ORG: LIVT

17 B+1

TITLE: Characteristic features of hydrofoil boat propellers

SOURCE: Leningrad. Institut vodnogo transporta. Trudy, no. 72, 1964. Sudovyye silovyye ustanovki (Marine power plants), 53-57

TOPIC TAGS: shipbuilding engineering, hydrofoil, ship component

ABSTRACT: The screw propeller characteristic defining the relationship between the engine horse-power and the number of revolutions is discussed in relation to the hydrofoil boat performance. Regular formulas used for determination of propeller performance could not be applied to the boats of hydrofoil type. The author's study was based on the experimental data obtained for motorboats "Meteor" and "Raketa". The speed conditions were divided into three stages. The first stage covered the forward motion in water at speeds up to 28 km/hr. The second intermediary stage from 28 to 45 km/hr was characterized by lifting the boat aloft to its gliding position on hydrofoil wings. The third stage, over 45 km/hr, was related to the hydrofoil motion. The boat resist-

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Card 1/2 UDC: 621.431.74.004.12:629.122.69

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ACC NR: AT6004453

0

ances were determined experimentally by towing appropriate models at different speeds. The resistance curves plotted against various speeds (20 to 80 km/hr) were shown in a graph for motorboats "Meteor" and "Raketa". The dependence of the horse-power (up to 1100 hp) and the boat speed (up to 80 km/hr) upon the propeller revolutions (800 to 2000 rpm) were also graphically illustrated for both boats. The index of resistance variation with speed fluctuated between 2.4 and 3 at the first stage, from 0.94 to 1.71 under intermediate conditions and from 1.64 to 1.74 during the final hydrofoil motion. The relations between the number of revolutions and power required were represented by approximate formulas expressing the engine exterior characteristic as well as the propeller characteristics under normal and hydrofoil conditions. The reserve in horse power for M-50 engines were estimated as 71% in the case of regular propeller operations in water and 40% for the motion under hydrofoil conditions. The possibility of accidental overloads in the course of hydrofoil operations was mentioned and a strict control of engine load conditions recommended. Orig. art. has: 3 graphs.

SUB CODE: 13 / SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

Card 2/2 BLG

ALEKSANDROV, A.V.; BARMIN, S.F.; MAKSIMOV, Yu.I.; SHAKHIDZHANOV, V.S.

Using electronic computers for the rapid calculation of non-stationary regimes in the operation of gas pipelines. Gaz. prom. 10 no.4:35-39 '65. (MIRA 18:5)

ALEKSANDROV, A. Ya. Dr. Tech. Sci.

Dissertation: "On Deformation of Adjouning Elastic Bodies." Moscow Order of the Red Banner Construction Engineering Inst., imeni V. V. Kuybyshev. 23 Jun 47.

SO: Vechernyaya Moskva, Jun, 1947 (Project #17836)

ALEKSANDROV, A.Ya., professor, doktor tekhnicheskikh nauk.

Selecting dimensions for ports and partitions between ports in slide valve and cylinder bushings. Trudy NIIZHT no.7: 76-82 '49. (MLRA 9:10)

(Locomotives--Cylinders)

ALEKSANDROV, A.Ya., doktor tekhn. nauk, prof.

Designing piston rings with low rigidity. Trudy NIIZHT no.8:72-88 '52. (MIRA 11:6)

(Piston rings)

ALEKSANDROV, A.Ya., doktor tekhn. nauk, prof.

One possible way of applying the photoelastic method to the investigation of plane elastic-plastic problems. Trudy NIIZH no.8: 89-94 '52. (MIRA 11:6)
(Photoelasticity) (Deformations (Mechanics))

ALEKSANDROV, A.Ya., doktor tekhn. nauk, prof.; MONAKHOV, V.F., inzh.

Using the photoelastic method to determine the pressure of piston rings on cylinder walls. Trudy NIIZHT no.8:125-129 '52. (MIRA 11:6)
(Photoelasticity) (Piston rings)

ALEKSANDROV, A.Ya., doktor tekhn. nauk, prof.; BOGAYENKO, V.P., inzh.

Using the photoelastic method to investigate plane elastic contact problems. Trudy NIIZHT no.8:130-135 '52. (MIRA 11:6)
(Surfaces, Deformation of)
(Photoelasticity)

ALEKSANDROV, A.Ya., doktor tekhn. nauk, prof.

One particular solution of axisymmetric dynamic elastic problems. Trudy NIIZHT no.8:139-142 '52. (MIRA 11:6)
(Elasticity)

SOV/124-57-4-4569

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 99 (USSR)

AUTHOR: Aleksandrov, A. Ya.

TITLE: On an Approximate Method of Solving Planar Contact Problems in the Theory of Elasticity (Ob odnom priblizhennom metode resheniya ploskikh kontaktnykh zadach teorii uprugosti)

PERIODICAL: Tr. Novosibir. in-ta inzh. zh.-d. transp., 1955, Nr 11, pp 5-28

ABSTRACT: A presentation of a general method of solving planar contact problems involving either two elastic bodies or a combination of an elastic body and a rigid stamp under conditions of complete engagement, friction, or complete absence of tangential restraint between the parts of the system. The elastic body, provided it is not bounded by a straight line, is regarded as a portion of a continuous plane. If a straight-line boundary exists, the body is regarded as a part of a half-plane the boundary of which coincides with the rectilinear boundary of the body. In order to achieve a state of stress in the portion of a plane or a half-plane which is identical to that prevailing in the elastic body which fulfills the contact conditions, vertical and horizontal distributed loads are applied along the outline formed by the intersection of

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SOV/124-57-4-4569

On an Approximate Method of Solving Planar Contact Problems (cont.)

the body with the plane or the half-plane. The law governing the distribution of these loads is given in the form of parabolas of n^{th} order. The unknown coefficients contained in the equations for the parabolas are determined with the aid of a requirement stating that the contact conditions must be satisfied in a number of points situated along the line of contact. For the purpose of simplification the loads that must be found are replaced by a system of concentrated forces. Thus, utilizing a half-plane (i. e., the basic case of this study) the stress distribution is determined by summing up the stresses produced by the individual loads, the components of these stresses being determined by Melan's formulas (Melan, E., Z. angew. Math. und Mech., 1932, Vol 12, Nr 6). The displacement formulas were obtained by the author by means of integrating Melan's stress formulas. Plotting of influence lines for the displacements and stresses facilitates computation. By way of an illustration, a solution is given for a problem dealing with the penetration of a rigid wedge into a triangular depression located near the edge of the half-plane. The author overlooked an error in Melan's formula for the horizontal components of normal stresses resulting from the application of a horizontal force (in the case of a horizontal half-plane boundary). Consequently, the formulas derived by the author for the displacements resulting from the action of this force are erroneous. See RZhMekh, 1956, abstract 7680

Card 2/2

M. I. Gorbunov-Posadov

2018 Alexandrov, A. Ye., Some solutions of axially symmetrical contact problems in the theory of elasticity (in Russian)
Trudi Novosibirsk. in-ta inzh. zh.-d. transp. no. [illegible]
Ref. Zh. Mekh. no. 11, 1956, Rev. 760

The application of a method of graphical analysis to the problem of axially symmetrical contact is described; the method was developed previously by the author for the two-dimensional case (p. [illegible]) ... the same issue.

The example of a rigid, conical punch in presence of friction with a coefficient $\mu = 0.1$ is examined.

N. A. Rostovtsev

Courtesy Referativnyi Zhurnal, USSR

Translation, courtesy Ministry of Supply, England

ALEKSANDROV, A.Ya., professor, doktor tekhnicheskikh nauk

Tension and displacement in an elastic space and semispace under the action of an evenly distributed load on a ring. Trudy NIIZHT no.11:62-88 '55. (MLRA 9:10)

(Elasticity)

ALEKSANDROV, A.Ya., professor, doktor tekhnicheskikh nauk; MONAKHOV, B.F., inzhener; KLYACHKO, S.D., student; PRESNIKOV, V.Ya., student

Investigation of plane contact problems for soils by means of photoelasticity. Trudy NIIZHT no.11:89-101 '55. (MLRA 9:10)

(Photoelasticity) (Soil mechanics)

ALEKSANDROV, A.Ya.,prof.; AKHMETZYANOV, M.Kh.,inzh.; KRASNOV, L.A.,inzh.

Using the photoelastic method for investigating triple hinged plated disk-shaped arches. Trudy NIIZHT no.14:53-98 '58. (MIRA 12:1)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta. (Photoelasticity) (Arches)

ALEKSANDROV, A.Ya., doktor tekhn.nauk, prof.

Determining flexure in certain cases of longitudinal-latitudinal bending of rods. Trudy NIIZHT no.14:143-150 '58. (MIRA 12:1)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta. (Elastic rods and wires)

ALEKSANDROV, A.Ya., prof.; GROMOV, L.K., assistent

Friction action in a railroad track base. Trudy NIIZHT no.14:151-153 '58. (MIRA 12:1)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta.
(Railroads--Track)

ALEKSANDROV, A.YA.

1(3); 14(10) p.2 PHASE I BOOK EXPLOITATION SOV/2606

Voprosy rascheta elementov aviatsionnykh konstruktsiy; raschet trekhsloynykh paneley i obolochek. Sbornik statey, No. 1 (Problems in Calculating Aircraft Structural Elements; Calculating of Sandwich Panels and Shells. Collection of Articles, No. 1) Moscow, Oborongiz, 1959. 169 p. Errata slip inserted. 2,600 copies printed.

Ed.: A.Ya. Aleksandrov, Doctor of Technical Sciences, Professor; Ed. of Publishing House: T.A. Valedinskaya; Tech. Ed.: V.P. Rozhin.

PURPOSE: This collection of articles is intended for engineers and scientific workers concerned with stress analysis of aircraft structural elements.

COVERAGE: The articles in this collection discuss problems in the structural analysis of sandwich panels with light cores, such as problems of the stability of curved panels, design of cores with consideration of transversal tension (tear-off) and the results of panel-strength tests. In addition, problems in the calculation of torsion and bending of a

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cylindrical shell reinforced by bulkheads are covered and the calculation of unsteady temperatures in an I-beam element is considered.

TABLE OF CONTENTS:

with consideration of shear and transversal stresses (tear-off) which arise along the surface of the junction between the outer layers and the core. Calculation formulas were obtained for plates operating under longitudinal compression and longitudinal and transverse bending.

3. Kurshin, L.M. Large Deflections of a Cylindrical Sandwich Shell 39

A system of nonlinear equations for ultimate buckling of cylindrical sandwich shells is obtained by the variational method. The problem of longitudinal compression of a cylindrical sandwich panel simply supported along its four edges is solved according to the nonlinear theory. The results permit the conclusion that load reduction following loss of stability is smaller for sandwich shells with a light core than for single-layer shells of the same thickness.

4. Kurshin, L.M. Stability Under Compression of a Simply Supported Cylindrical Sandwich Panel and of a Cylinder With a Corrugated Core 51

A formula is obtained for calculating curved sandwich panels under longitudinal compression with consideration of the natural bending stiffness of the outer layers. The domain is established in which the assemption of this stiffness being equal to zero is applicable.

Torsion of an open cylindrical shell reinforced by bulkheads is considered in this paper. The solution is obtained without introduction of additional hypotheses aside from the general assumptions associated with representing the operation of an open shell as momentless. On the basis of the solution the limits of applicability are shown of the hypothesis of warping which has been widely used in problems of calculating open shells under torsion.

wing): 1) the method of direct integration of the heat-conduction equations, and 2) the method of elementary equilibrium. Cases of symmetrical and unsymmetrical heating of such elements through the outer flange surfaces are considered as well as the case of different thicknesses of flanges. Solution of the problem is given under the assumption that physical characteristics of the material and the heat-transfer coefficients do not depend on temperature variation.

AVAILABLE: Library of Congress

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ALEKSANDROV, A.YA.

PHASE I BOOK EXPLOITATION SOV/4441

Voprosy rascheta elementov aviatsionnykh konstruktsiy; raschet trekhsloynykh paneley i obolochek, sbornik statey, no. 2 (Problems in Calculating Aircraft Construction Elements; Calculation of Sandwich Panels and Shells, Collection of Articles, No. 2) Moscow, Oborongiz, 1959. 135 p. Errata slip inserted. 1,900 copies printed.

Eds.: A. Ya. Aleksandrov, Doctor of Technical Sciences, Professor, and L.M. Kurshin, Candidate of Technical Sciences; Managing Ed.: A.S. Zaymovskaya, Engineer; Ed. of Publishing House: P.B. Morozova, Tech. Ed.: V.I. Oreshkina.

PURPOSE: This book is intended for engineers, designers, scientific workers and students.

COVERAGE: The book is a collection of 10 articles dealing with theoretical and experimental investigation of the strength of sandwich constructions with light-weight fillers of the foamed-plastic type and rigid fillers of the corrugated and honeycomb type. The articles discuss the general rigidity of sandwich plates and cylindrical shells during longitudinal compression; simultaneous bending, compression and shear of plates; local rigidity; problems in the determination

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of reduced elastic parameters of honeycomb fillers; and the selection of optimum parameters for plates. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

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ALEKSANDROV, A.Ya.; BRYUKKER, L.E.

Strength test of sandwich panels with a foamed plastic filler. Vop.rasch.elem.aviats.konstr. no.1:3-13 '59. (MIRA 13:6)

(Elastic plates and she'ls--Testing)

ALEKSANDROV, A.Ya.

Calculating the filler for sandwich plates taking breaking into consideration. Vop.rasch.elem.aviats.konstr. no.1: 15-38 '59. (MIRA 13:6)
(Elastic plates and shells)

SOV/179-59-1-17/36

AUTHORS: Aleksandrov, A. Ya. and Krasnov, L. A. (Novosibirsk)

TITLE: Electrical Compensator for Measuring the Path Difference in Investigations by the Photoelastic Method (Elektricheskiy kompensator dlya izmereniya raznosti khoda pri issledovaniyakh metodom fotouprugosti)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 122-126 (USSR)

ABSTRACT: The paper is a continuation of previous work (Ref.4). The essential feature of the equipment is a Kerr condenser situated on the axis of the polarimeter in place of the usual compensator. In static experiments, the Kerr voltage is measured potentiometrically and in dynamic experiments it is displayed on a cathode-ray tube. The formulae required for the determination of the principal stress directions and the path difference are derived. There are 9 figures and 5 references, 4 of which are Soviet and 1 German.

SUBMITTED: July 28, 1958.

Card 1/1

ALEKSANDROV, A.Ya.; TROFIMOVA, E.P.

Determining reduced elastic parameters of honeycomb fillers for sandwich panels. Vop.rasch.elem.aviats.konstr. no.2:3-26 '59. (MIRA 13:6)

(Elastic plates and shells)

ALEKSANDROV, A.Ya.; SAVVINA, G.S.; TALANOVA, G.M.

Local compressive strength of sandwich plates with a corrugated filler. Vop.rasch.elem.aviats.konstr. no.2:27-42 '59. (MIRA 13:6)

(Elastic plates and shells)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100820009-1"

ALEKSANDROV, A.Ya.; KURSHIN, L.M.

Compression of a reinforced plate. Vop.rasch.elem.aviats.konstr. no.2:114-124 '59. (MIRA 13:6)
(Elastic plates and shells)

ALEKSANDROV, A.Ya.; KURSHIN, L.M.; PRUSAKOV, A.P.

Selecting parameters of sandwich plates with a light filler designed for compression. Vop.rasch.elem.aviats.konstr. no.2: 125-130, 1959 (MIRA 13:6)
(Elastic plates and shells)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100820009-1"

ALEKSANDROV, A.Ya.; BRYUKKER, L.E.

Results of longitudinal compression tests of rectangular sandwich plates. Vop.rasch.elem.aviats.konstr. no.2:131-135 '59. (MIRA 13:6)

(Elastic plates and shells--Testing)

S/179/59/000/06/019/029
E081/E141

AUTHORS: Aleksandrov, A.Ya., and Nazarov, N.I. (Nvosibirsk)

TITLE: The Stresses in Glued Joints

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 6, pp 121-126 (USSR)

ABSTRACT: It is known that uniform extension of joints in thin laminae with overlap (Fig 1a) or with a plate (Fig 1b) leads to very high stresses near the edges and to lower stresses in the middle parts of the joint (Refs 1-4). Scarf joints (Fig 1B) give the most uniform stress distribution (Ref 5), but their practical applicability is limited. Considerable improvement can be effected with plated joints if the plating has a high bending stiffness and relatively low extensional stiffness (Figs 1?-e). In the present paper, joints of types 1d, i.e. working within the proportional limits in uniform tension, are considered. The glue line stresses for the combination shown in Fig 2 are determined by the mutual horizontal displacements of the glued-laminae and plate and by the thickness of the glue layer. Assuming that these displacements depend only on the extension of the

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glued elements and that the shear stresses are uniformly distributed through the layer, it is found that

$$\frac{\delta_3(x)\tau_{xy3}(x)}{G_3} = \frac{d_3(\ell)\tau_{xy3}(\ell)}{G_3} - \int_x^{\ell} \frac{1}{B_1(x)}\left(q - \int_x^{\ell} \tau_{xy3}(\xi)\, d\xi\right)$$

$$dx + \int_x^{\ell} \frac{1}{B_2(x)}\left(\int_x^{\ell} \tau_{xy3}(\xi)\, d\xi\right) dx \qquad (1.1)$$

where $\tau_{xyi}(x)$, $\tau_{yzi}(x)$, $\tau_{xzi}(x)$, $\sigma_{yi}(x)$ are the shear and normal stresses of a section with abscissa x (the index $i=1$ corresponds with the lamina, $i=2$ with the plate, and $i=3$ with the glue layer); G_i, E_i, μ_i are the shear modulus, elasticity modulus and Poisson's ratio respectively; $\delta_i(x)$ is the thickness of the element i; $B_i(x)$ and $D_i(x)$ are the stiffnesses in extension and bending respectively per unit width, and q is the uniform load per unit width of lamina.

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The shear stress distribution is then determined approximately by Eqs (1.1) and (1.5), and the tearing stresses by Eqs (1.3), (1.4) and (1.6), in which V_1 represents the deflection of the element i. The behaviour of the construction shown in Fig 3 working in shear is described by Eqs (1.7)-(1.9), where t is the total shear load per unit length of the contour of the rectangle abcd (Fig 3b). The equations (1.1), (1.3) and (1.4) are solved by taking the extensional stiffness of the plate in the form (1.10), and Eq (1.1) then becomes (1.11). If the plate has large bending stiffness, and $\delta_3(x)$ and $\delta_1(x)$ are constant, the first equation (1.4) and Eq (1.2) lead to Eq (1.12), the solution of which is given by Eqs (1.13)-(1.15). Assuming that the extensional stiffnesses along the joint, plate and laminae are constant, and that the bending stiffness of the plate is very large compared with the stiffness of the laminae (Fig 12), Eq (1.1) with $\delta_1(x)$ = const and $\delta_3(x)$ = const, leads to Eq (2.1) of which the solution for the shear stress $\tau_{xy3}(x)$ is given by Eq (2.3) and for

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the stress $\sigma_{y3}(x)$ by Eq (2.5). Fig 5 illustrates Eqs (2.3) and (2.5) graphically for $E_3 = 2.1 \times 10^4$ kg/cm^2 (glue BF-4), $E_1 = 7.2 \times 10^5$ kg/cm^2 (dural), $G_3 = 0.72 \times 10^4$ kg/cm^2, $\delta_1 = 0.4$ cm, $\ell = 5$ cm, $B_2 = 3B_1 = 2.88 \times 10^5$ kg/cm, $\delta_3 = 0.004$ cm (curve 1), 0.02 cm (curve 2), 0.05 cm (curve 3), 0.1 cm (curve 4), and τ_{max} is given by the first equation on page 125. Results of calculations for a glue and plate of constant extensional stiffness are shown in Fig 6 for $\ell = 15$ cm, $\delta_3 = 0.02$ cm, $E_1 = 7.2 \times 10^5$ kg/cm^2, $E_3 = 2.1 \times 10^4$ kg/cm^2, $\delta_1 = 0.3$ cm. In the case of a plate with large bending stiffness (Fig 1d), the equations (3.1)-(3.3) apply. The profile of the plate corresponding to the condition $\tau_{xy3}(x)$ = const is given by Eq (3.4). If the thickness of the middle part of the plate is constant (Fig 7), the shear stresses in the plate are given by Eqs (3.8) and (3.11).

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There are 7 figures and 5 references, of which 4 are English and 1 is German.

SUBMITTED: May 22, 1959

ALEKSANDROV, A.Ya. (Novosibirsk); NAZAROV, N.I.(Novosibirsk)

Bending of a slant cantilever plate. Inzh. sbor. 25:37-44 '59.
(MIRA 13:2)

(Elastic plates and shells)

16 (1)

AUTHOR: Aleksandrov, A. Ya. SOV/20-128-1-13/58

TITLE: Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetrical Problem of the Theory of Elasticity for an Infinite Plate

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, pp 57 - 60 (USSR)

ABSTRACT: The above relations have already been investigated in several previous articles, however, no solution of the axially symmetrical problem has been found as yet on the basis of the known solution of the corresponding two-dimensional problem. This article deals with the elaboration of such a method for an infinite plate. The latter is assumed to be, with respect to the YOZ-plane, in a two-dimensional, nonspherical state brought about by the action of the vertical and horizontal loads Q and P. By rotating the loads acting upon the plate by the angle π with respect to the OZ-axis, a certain transformed axially symmetrical state is attained. The following may then be shown: The loads Q and P, which are distributed on two lines parallel to the OY-axis in two-dimensional state, correspond to the load

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetrical Problem of the Theory of Elasticity for an Infinite Plate

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$$q(\varrho) = \frac{2Q}{\sqrt{\varrho^2-a^2}}, \quad p(\varrho) = \frac{2aP}{\varrho\sqrt{\varrho^2-a^2}} \quad (\varrho \geqslant a); \quad q(\varrho) = p(\varrho) = 0 \quad (\varrho < a)$$

in a transformed, axially symmetrical state. In the case $Q = Q(a)$, $P = P(a)$ at $a < a < \infty$, and $Q = P = 0$ at $0 < a < a_0$, however, it holds: $q(\varrho) = \int_{a_0}^{\varrho} \frac{2Q(a)}{\sqrt{\varrho^2-a^2}}\,da$, $p(\varrho) = \int_{a_0}^{\varrho} \frac{2aP(a)}{\varrho\sqrt{\varrho^2-a^2}}\,da$, $(\varrho \geqslant a_0)$; $q(\varrho) = p(\varrho) = 0$ $(\varrho < a_0)$. The tensions of the transformed, axially symmetrical state are determined by integration in the following manner:

$$\sigma^*_{ro} = \int_0^{\pi} (\sigma_{xp} \cos^2\theta + \sigma_{yp} \sin^2\theta)\,d\theta, \quad \sigma^*_{zo} = \int_0^{\pi} \sigma_{zp}\,d\theta$$

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetrical Problem of the Theory of Elasticity for an Infinite Plate SOV/20-128-1-13/58

$$\sigma^*_{\theta o} = \int_0^{\pi} (\sigma_{yp} \cos^2\theta + \sigma_{xp} \sin^2\theta) d\theta, \quad \tau^*_{rzo} = \int_0^{\pi} \tau_{xzp} \cos\theta \, d\theta,$$

where $\sigma_{xp}(x,z)$, $\sigma_{xp}(x,z)$,... denote the tensions of the two-dimensional state, and it holds: $x = r\cos\theta$. The author then investigated the following case: The two-dimensional plate is assumed to be in axially symmetrical state, effected by the action of the radial and vertical loads Q and P. By shifting the loads acting upon the plate along the OY-axis from $y = -\infty$ to $y = \infty$ a transformed two-dimensional state is attained. Formulas for the loads in transformed two-dimensional state are then written down. The tensions of this state are determined by integration as follows:

$$\sigma^*_{xp} = \int_{-\infty}^{\infty} (\sigma_{ro}\cos^2\theta + \sin_{\theta o} \sin^2\theta) dy, \quad \sigma^*_{zp} = \int_{-\infty}^{\infty} \sigma_{zo} dy;$$

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$$\sigma^*_{yp} = \int_{-\infty}^{\infty} (\sigma_{ro} \sin^2\theta + \sigma_{\theta o} \cos^2\theta)\,dy; \quad \tau^*_{xzp} = \int_{-\infty}^{\infty} \tau_{rzo} \cos\theta \, dy,$$

where $\sigma_{ro}(r,z)$, $\sigma_{\theta o}(r,z)$,... denote the tensions of the axially symmetrical state $r^2 = x^2 + y^2$, $\cos\theta = x/r$, $\sin\theta = y/r$. If the loads Q and P act upon the same plane in axially symmetrical state, the relations between the latter and the transformed, axially symmetrical state may be deduced from the equations written at the beginning. In the general case it is possible to ascertain the tensions of the axially symmetrical state by one of the two-dimensional states with transformed load provided the loads are given. In this case, the action of vertical and horizontal loads is separately investigated. In conclusion, the author determined expressions for loads of the two-dimensional state which yield the given axially symmetrical expressions after one rotation. There are 1 figure, 2 tables, and 4 references, 1 of which is Soviet.

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetrical Problem of the Theory of Elasticity for an Infinite Plate SOV/20-128-1-13/58

ASSOCIATION: Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta (Novosibirsk Institute for Railroad Engineers)

PRESENTED: February 28, 1959, by Yu. N. Rabotnov, Academician

SUBMITTED: February 10, 1959

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24.4100

67271

~~16(1)~~ SOV/20-129-4-11/60

AUTHOR: Aleksandrov, A. Ya.

TITLE: Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetric Problem of the Elasticity Theory and the Solution of the Axially Symmetric Problems With the Aid of Analytical Functions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 754-757 (USSR)

ABSTRACT: The author here generalizes a method (by means of which he set up several relations between the solutions of the two-dimensional and axially symmetric problems for a plane elastic plate in one of his earlier papers (Ref 1)) to bodies which are bounded by surfaces of arbitrary contours. The function $r_0(z)$ must, however, be unique for that half of the body which is located on one side of the YOZ plane. By means of the relations thus determined, the solution of the first and of the second axially symmetric fundamental problem is reduced to the determination of functions of a complex variable, which are axially symmetric in the investigated range, from two integral equations.

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetric Problem of the Elasticity Theory and the Solution of the Axially Symmetric Problems With the Aid of Analytical Functions

1) First, a given cylinder is assumed to be in a plane deformed state, which is symmetric with respect to the YOZ plane. From this cylinder a rotational body is then cut out. The equations for the state of stress of this body are explicitly written down. 2) An elastic volume with an axially symmetric cavity is assumed to be located in an axially symmetric state of stress. Also in this case the cavity is cylindrical. By superposition of the components of the state of stress and of the deformed state due to their being shifted along the OY-axis from $y = -\infty$ to $y = +\infty$ a certain plane state of the volume with a cylindrical cavity is obtained. Expressions for the stresses and the deformations of the axially symmetric state are written down. The resulting equations are reduced to Abel's equations, and their solution is explicitly written down. 4

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetric Problem of the Elasticity Theory and the Solution of the Axially Symmetric Problems With the Aid of Analytical Functions

3) The stresses acting upon the body may be transformed under the conditions described. The transformation laws given in the above-mentioned earlier paper continue to hold also for volume forces. The formulas for the dilatation due to temperature in transition from the plane to the axially symmetric and also from the axially symmetric to the plane state are written down. Similar methods may be applied also in the other cases rendering superposition possible (e.g. in dynamical problems). By using the relations thus found, the solution of axially symmetric problems is then reduced to the determination of two analytical functions of a complex variable from two integral equations. As an example, the equations for the second main problem of elasticity for a massive body and for a body with a cavity are then written down. It is mentioned that the author thanks L. M. Krushin for useful advice concerning the transformation of the equations mentioned in this paper. There are 1 figure and 1 Soviet reference.

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Some Relations Between the Solutions of the Two-dimensional and the Axially Symmetric Problem of the Elasticity Theory and the Solution of the Axially Symmetric Problems With the Aid of Analytical Functions

ASSOCIATION: Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta (Novosibirsk Institute of Railroad Engineers)

PRESENTED: July 16, 1959, by Yu. N. Rabotnov, Academician

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SUBMITTED: June 10, 1959

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PHASE I BOOK EXPLOITATION SOV/4733

Aleksandrov, Avraam Yakovlevich, Leonid Eduardovich Bryukker, Lev Moiseyevich Kurshin, and Aleksandr Pavlovich Prusakov

Raschet trekhsloynykh paneley (Calculations for Sandwich Panels). Moscow, Oborongiz, 1960. 270 p. Errata slip inserted. 1,600 copies printed.

General Eds.: A. Ya. Aleksandrov, Doctor of Technical Sciences, Professor, and L.M. Kurshin, Candidate of Technical Sciences; Ed.: A.A. Goryainov, Candidate of Technical Sciences; Managing Ed.: A.S. Zaymovskaya, Engineer; Ed. of Publishing House: P.B. Morozova; Tech. Ed.: N.A. Pukhlikova.

PURPOSE: This book is intended for designers, scientific personnel, and students in related fields.

COVERAGE: The book contains formulas and diagrams for strength calculation of flat and curved sandwich panels with various cores (homogeneous foam-plastic type, ribbed, etc.) under various support conditions, and subjected to various combinations of loads. Data on selecting optimum parameters of panels and on strength testing of panels are included. The introduction and Chapters 11, 12, 13, 15, 27, and 28 were written by A. Ya. Aleksandrov; Chs. 6, 16, 17, 18, 19, 21, 23, 24, 25, and 26 by L.E. Bryukker; Chs. 2, 3, 5, 8, 9, 10, 14, 20, part of Ch. 4

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and part of Ch. 1 (Sections 1.5, 1.7, 1.8.2, 1.10, 1.11, and 1.12) by L.M. Kurshin; and Chs. 7, 22, part of Ch. 4, and part of Ch. 1 (Sects. 1.1, 1.2, 1.3, 1.4, 1.6, 1.8.1, 1.9, 1.13) by A.P. Prusakov. Materials supplied by N.I. Nazarov are used in Sect. 16.2 of Ch. 16. The authors thank E.P. Trofimova for her assistance. There are 136 references: 32 Soviet, 101 English, and 3 German.

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ALEKSANDROV, A. YA.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

1. A. A. Abbasov, A. F. Kasimov, Ia. A. Shvarts (Baku): Supersonic motions of visco-plastic solids and the basis for improving well cementation.
2. A. A. Abbasov, V. M. Makhtiyev, A. A. Mirsojan (Baku): Heat transfer in moving viscous and visco-plastic solids.
3. N. L. Abramian (Erevan): Torsion of cylindrical shafts.
4. B. L. Abramian, A. A. Babloian (Erevan): Torsion of circular hollow shafts with longitudinal notches.
5. V. L. Agamirov, A. S. Volmir, V. E. Mineev (Moscow): Buckling and post-buckling behavior of shells under dynamic loading.
6. A. Ia. Aleksandrov (Novosibirsk): Some relations between the solutions of plane and axisymmetrical problems in the theory of elasticity.
7. A. Ia. Aleksandrov (Novosibirsk): Experimental investigation of plane elastic-plastic problems by means of photoelastic films.
8. V. M. Aleksandrov, Iu. A. Ustinov (Rostov-na-Donu): Some contact problems in elasticity.
9. N. A. Aleksandrian, N. Kh. Arutiunian, M. M. Manukian (Erevan): Torsion of prismatic bars under transient creep.
10. S. A. Alekseev (Moscow): Two-dimensional bodies of equal strength.
11. N. A. Alumäe (Tallin): Axisymmetrical vibration of an elastic conical shell.
12. S. A. Ambartsumian (Erevan): On the theory of anisotropic shells and plates.
13. S. A. Ambartsumian, L. A. Movsisian (Erevan): Some problems in the theory of anisotropic (non-orthotropic) shells.
14. L. Ia. Amiro (Kiev): Stability analysis of a stiffened cylindrical shell under axial compression.
15. V. V. Andreev, A. M. Kosevich, L. V. Tanatarov (Kharkov): The inelastic deformation and residual strains in a plane layer of a solid under allotropic transformations.
16. L. G. Aramanovich (Moscow): The stress distribution in a heavy half-space with a circular hole, the edge of which is subject to non-equilibrated forces.
17. M. Arcan, M. Tannenbaum (Bucharest): Photoelastic model studies of cracked reinforced concrete beams.
18. N. Kh. Arutiunian (Erevan): The plane contact problem of the theory of creep.
19. V. V. Assonova, V. I. Zatsepina, A. A. Trapeznikov (Moscow): Shear strengths and limits of reversible strains of solutions and gels of some rubbers.
20. I. N. Baida (Leningrad): The general solution of the problem of elastic strains in a cylinder of finite length.
21. G. I. Barenblatt (Moscow): The theory of equilibrium cracks under brittle rupture.
22. G. M. Bartenev (Moscow): Rheological properties of rubber-like polymers.
23. M. F. Barshtein (Moscow): Dynamic design of structures subjected to random effects.
24. N. V. Bashlubenko (Moscow): Temperature distribution in container and metal during extrusion.
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27. A. Da. Birkgan, A. S. Volmir (Moscow): The use of electronic digital computers for solving non-linear problems in the theory of plates and shells.
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31. V. V. Bolotin (Moscow): Method of space transformations in the non-linear theory of plates and shells.
32. V. V. Bolotin (Moscow): The non-linear problems of aeroelasticity at supersonic speeds.
33. V. V. Bolotin (Moscow): Strength and damage under action of random forces.
34. V. V. Bolotin (Moscow): The statistical theory of seismic design of structures.

ALEKSANDROV, A. YA.

PHASE I BOOK EXPLOITATION SOV/4042

Leningrad. Universitet

Polyarizatsionno-opticheskiy metod issledovaniya napryazheniy; trudy konferentsii 13-21 fevralya 1958 goda (Optical Polarization Method for Stress Analysis; Transactions of the Conference of February 13-21, 1958). [Leningrad] Izd-vo Leningradskogo univ., 1960. 451 p. Errata slip inserted. 2,400 copies printed.

Resp. Ed.: S.P. Shikhobalov; Ed.: Ye.V. Shchemeleva; Tech. Ed.: S.D. Vodolagina; Editorial Board: S.G. Gutman, L.M. Kachanov, V.M. Krasnov, T.D. Maksutova, N.I. Prigorovskiy, V.M. Proshko, N.S. Rozanov, and Ye.I. Edel'shteyn.

PURPOSE: This collection of 58 articles is intended for scientists and engineers concerned with experimental stress analysis of machine parts and structural components.

COVERAGE: The collection contains reports presented at the conference on optical polarization methods in stress analysis held February 13 - 21, 1958, in Leningrad and attended by 524 delegates including representatives of the People's Republic of China, the Polish People's Republic, the German Democratic Republic, and the Republic of Czechoslovakia. The reports discuss general theoretical problems and new methods of investigation and describe apparatus and materials used in the optical method. Solutions of specific two-dimensional and three-dimensional problems occurring in shipbuilding, aircraft design, engine construction, in various branches of heavy and precision machine design, in mining, metallurgy, hydraulic structures, railroad transport, in structural mechanics, geodynamics, in the control of stresses in products of the glass and electronic industry, etc., are given. Solution of the three-dimensional problem by means of the method of photoelasticity is introduced and the use of this method for the solution of problems associated with plasticity, creep, dynamics, hydrodynamics, etc., is demonstrated. Reports previously published elsewhere are printed here in abbreviated form. No personalities are mentioned. References are found at the end of 47 of the reports.

Optical Polarization Method (Cont.) SOV/4042

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ALEKSANDROV, A.Ya., prof., doktor tekhn.nauk, red.; KURSHIN, L.M., kand.tekhn.nauk, red.; MOROZOVA, P.B., izdat.red.; ORESHKINA, V.I., tekhn.red.

[Designing elements of aircraft structures; analysis of sandwich panels and shells] Voprosy rascheta elementov aviatsionnykh konstruktsii; raschet trekhsloinykh panelei i obolochek. Sbornik statei. Pod red. A.IA. Aleksandrova i L.M.Kurshina. Moskva, Gos.izd-vo obor.promyshl. No.2. 1959. 134 p. (MIRA 14:2)

(Elastic plates and shells)
(Airplanes--Design and construction)

S/260/62/000/004/004/005
I006/I206

AUTHORS: Aleksandrov, A. Ya and Bryukker, L. E.

TITLE: Strength testing of triple-layer panels with penoplast fillers

PERIODICAL: Referativnyy zhurnal, vozdushnyy transport. Svodnyy tom. no. 4, 1962, 9, abstract no. 4 A46, In collection (Vopr elementov aviats. konstruktsiy), M., Oborongir, no. 1, 1959, 3-13

TEXT: none given

[Abstracter's note: Complete translation of title only.]

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24.4200

S/124/62/000/004/027/030
D251/D301

AUTHOR: Aleksandrov, A. Ya.

TITLE: Calculation of the filler of a three-layer plate, with consideration of a cavity

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 4, 1962, 16, abstract 4V111 (V sb. Vopr. rascheta elementov aviats. konstruktsii, no. 1, M., Oborongiz, 1959, 14-38)

TEXT: A method is given for calculating the strength of a light filler of three-layer plates with consideration of the stresses of displacement and a cavity arising on the surface of junction of the outer layers with the filler. Computation formulas are obtained for plates acting on longitudinal compression and longitudino-transverse bending. An infinitely wide three-layer plate with a filler of constant modulus of elasticity, supported at both sides is considered as an example. For different parameters of the plate which has initial skew-symmetric bending the critical compression stress of the outer layers, the maximum values of the displacement

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D251/D301

Calculation of the ...

and cavity stress on the surface of junction relative to the initial bending are presented and also the value of the compression stresses in the filler, arising from the general compression of the whole plate. Formulas are derived for determination of stresses arising from initial undulation of the outer layers of the plate. An estimate is given of the applicability of these formulas for wave-lengths, for which the described stresses will be at a maximum. The case is considered of when the three-layer plate simultaneously possesses intial skew-symmetric bending and initial undulation of the outer layers. The results of the calculations are presented in tables. /Abstracter's note: Complete translation./

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ALEKSANDROV, A.Ya. (Novosibirsk)

Investigation of certain mixed boundary value problems with the aid of the membrane analogy. PMTF no.4:95-96 N-D '60. (MIRA 14:7)

(Boundary value problems)
(Hydrodynamics--Electromechanical analogies)

S/207/61/000/006/012/025
A001/A101

AUTHORS: Aleksandrov, A.Ya., Akhmetzyanov, M.Kh. (Novosibirsk)

TITLE: Investigation of plane elastic-plastic problems by means of photoelastic coatings

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1961, 99 - 110

TEXT: This article deals with investigations of elastic-plastic problems by the polarization-optical method using photoelastic coatings applied to metallic bodies being investigated. The authors propose and experimentally test some general methods for separating strains and determining stresses in both elastic and plastic regions of the bodies being deformed. Stresses in the elastic region are found by means of the optical difference of polarized light beams passing normally through the coating and by using the Hooke law. To separate main strains, various methods can be employed: the method of transverse strain (in case of investigating bodies being in the plane strained state), methods of graphical integration of differential equilibrium equations, and the method based on using equations for joint strains. The elastic region of the body being investigated can

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be distinguished from its plastic region by using the phenomenon of change of Poisson coefficient, associated with appearance of plastic deformations. In plastic regions stresses can not be inferred from the knowledge of patterns of strained state without one of the assumptions following from various theories of plasticity, such as deformation theory and theory of flow. The authors then list the basic assumptions made and describe the methods of determining stresses when each of them is employed; they are as follows: 1) directions of main normal stresses and strains coincide; 2) intensity of stress is a known function of strain intensity, independent of the form of the strained state; 3) volume strain is proportional to mean normal stress, and 4) main tangential stresses are proportional to main shears. Techniques of experiments are described. Epoxy resin ЭД-6 (ED-6) was applied as a material for photoelastic coatings, and its properties and methods of application are enumerated. Two devices of one-sided arrangement were used for polarization analysis of strains in the photoelastic coatings. Their principle of operation is described. As an example the authors present graphically the results of investigating a strip with a circular aperture subjected to tension, employing two of the mentioned assumptions. It turned out that the assumption of coincidence of directions of main stresses and strains is unfit for this case, whereas the assumption on a functional relation between intensities

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A001/A101

Investigation of plane elastic-plastic problems ...

of strains and stresses yields satisfactory results. The conclusion has been drawn that with development of plastic deformations, directions of main stresses turn relative to directions of main strains. There are 7 figures and 23 references, 13 of which are Soviet-bloc.

SUBMITTED: August 15, 1961

Card 3/3

ALEKSANDROV, A.Ya. (Novosibirsk); VOL'PERT, V.S. (Novosibirsk)

Applying a method of solving axisymmetrical problems in the theory of elasticity to the problem of a sphere and a space with a spherical hollow. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr. no.6:106-109 N-D '61. (MIRA 14:11)

(Elastic solids)

ALEKSANDROV, A.Ya. (Novosibirsk)

Solution of axisymmetrical problems in the theory of elasticity by means of relations between the axisymmetrical and plane states. Prikl. mat. i mekh. 25 no.5:912-920 S-O '61. (MIRA 14:10)

(Elasticity)

ALEKSANDROV, A.Ya.

Solving axisymmetric problems in the theory of elasticity by means of analytic functions. Dokl. AN SSSR 139 no.2:337-340 Jl '61.
(MIRA 14:7)

1. Novosibirskiy institut inzhenerov zheleznodorozhnogo trnasporta. Predstavleno akademikom Yu.N. Rabotnovym.
(Elasticity) (Functions, Analytic) (Boundary value problems)

PHASE I BOOK EXPLOITATION SOV/6061

Aleksandrov, Avraam Yakovlevich, Mikhail Yakovlevich Borodin, and Viktor Vasil'yevich Pavlov

Konstruktsii s zapolnitelyami iz penoplastov (Constructions With Foamed-Plastic Fillers). Moscow, Oborongiz, 1962. 186 p. Errata slip inserted. 4500 copies printed.

Ed. (Title page): A. Ya. Aleksandrov, Doctor of Technical Sciences, Professor; Ed.: L. M. Kurshin, Candidate of Technical Sciences; Ed. of Publishing House: N. A. Gortsuyeva; Tech. Ed.: A. Ya. Novik; Managing Ed.: S. D. Krasil'nikov, Engineer.

PURPOSE: This book is intended for design engineers, designers, process engineers, and students of schools of higher technical education.

COVERAGE: The book deals with the characteristics of working with units constructed with foamed-plastic and similar light fillers. Methods of designing,

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manufacturing, calculating, and testing the strength of such structures are discussed. General information on foamed plastics and their physicochemical properties is also given. Ch. I was written by M. Ya. Borodin; Ch. II, by V. V. Pavlov (except parts A and B of section 4, article 2, and article 4); and the Introduction, Chs. III and IV, and the remainder of Ch. II, by A. Ya. Aleksandrov. No personalities are mentioned. There are 34 references: 15 Soviet, 14 English, 4 German and 1 Italian.

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D237/D301

10.7100
AUTHOR: Aleksandrov, A.Ya.

TITLE: Some relations between the stress functions of plane and axially symmetric problems of the theory of elasticity and the solution of the axially symmetric problem for an infinite, hollow, heavy cone

PERIODICAL: Akademiya nauk SSSR. Sibirskoye otdeleniye. Izvestiya, no. 2, 1962, 15 - 24

TEXT: The author establishes some relations between the stress functions of an axially symmetric state of an infinitely long solid or hollow cone, and stress functions of the plane state of the corresponding prisms. It is found that with those relations identical boundary conditions may be fulfilled on the similar side surfaces. The solution for the axially symmetric case, analogous to the known general solution of the plane case, incorportates a series of known results, and leads to some new solutions for the cone. Polar coordinates, plane and spherical, are used in derivations and the author shows that the method can be used when other coordinate sys-

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Some relations between the stress ...

tems, e.g. cylindrical, are used. The relations for the known general solution of the plane problem are tabulated, and the results obtained are used to solve the case of an infinitely long heavy cone, whose side surfaces are under load. There are 2 figures, 1 table and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: A. Morgan ZAMP, Bd. 5, no. 4, 1954; A. Morgan, ZAMP, Bd. 7, no. 2, 1956.

ASSOCIATION: Novosibirskiy institut inzhenerov zheleznodorozhnogo transporta (Novosibirsk Railway Engineering Institute)

SUBMITTED: July 15, 1961

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ALEKSANDROV, A.Ya. (Novosibirsk)

Using analytic functions in solving the three-dimensional axisymmetric problem in the presence of volumetric forces or thermal stresses. Izv.AN SSSR.Otd.tekh.nauk.Mekh. i mashinostr. no.4:130-133 Jl-Ag '62. (MIRA 15:8)

(Elasticity)

S/040/62/026/001/015/023
D237/D304

AUTHORS: Aleksandrov, A. Ya. and Solov'yev, Yu. I. (Novosibirsk)

TITLE: A method of solving solid, axially symmetrical problems of the theory of elasticity by complex variable functions and a solution of these problems for a sphere

PERIODICAL: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk. Prikladnaya matematika i mekhanika, v. 26, no. 1, 1962, 138-145

TEXT: In the case of axially symmetrical deformation of the body of revolution, components of elastic deformation w, u are given by Eq.(1.1)

$$2Gw = 4(1-\nu)B_z - \frac{\partial}{\partial z}(zB_z + rB_r + B_o) \quad \text{where } \nu = \text{Poisson's coefficient,}$$
$$2Gu = 4(1-\nu)B_r - \frac{\partial}{\partial r}(zB_z + rB_r + B_o)$$

G = shear modulus, and Bz, Br, Bo = functions of z, r, satisfying Eq.

(1.2) $\Delta B_z = 0, \quad \Delta(B_r e^{i\theta}) = 0, \quad \Delta B_o = 0$

$$\left(\Delta = \frac{\partial^2}{\partial z^2} + \frac{\partial^2}{\partial r^2} + \frac{1}{r}\frac{\partial}{\partial r} + \frac{1}{r^2}\frac{\partial^2}{\partial \theta^2}\right).$$

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A method of solving solid ...

z, v, θ are cylindrical coordinates and z = the axis of rotation. Functions of the complex variable are then introduced, namely $\varphi_n(\zeta)$, (n = 1, 2, 3) in the zr-plane. If they are holomorphic within the region in question, then equations are obtained which can be integrated for the given displacements W_0 and u_0 on the boundary. The expressions for stresses are similarly obtained. The above arguments can also be applied to the elastic space with an axially symmetrical cavity with only slight changes in definitions. The problems of the elastic sphere and of the elastic space with a spherical cavity are then solved and the solutions illustrated by three examples. There are 3 figures and 4 Soviet-bloc references.

SUBMITTED: July 5, 1961

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S/763/61/000/000/002/013

AUTHOR: Aleksandrov, A. Ya.

TITLE: On the solution of axially-symmetrical problems of the theory of elasticity by the methods of the theory of the function of a complex variable.

SOURCE: Nekotoryye problemy matematiki i mekhaniki. Novosibirsk, Izd-vo Sib. otd. AN SSSR, 1961, 42-46.

TEXT: This paper is devoted to the construction of methods for the solution of axially-symmetrical problems of the theory of elasticity with the aid of analytical functions. Relationships are established between planar and axially-symmetrical states. These relationships and well-known concepts of the components of planar states in terms of analytical functions of a complex variable are employed to find representations of the components of the axially-symmetrical states in terms of analytical functions. As a result, the solution of the axially-symmetrical problems are reduced to the determination of the contour values of two analytical functions from two integral equations. Reference is made to methods that establish a connection between planar and axially-symmetrical stress distributions in papers by K. Weber (Z. f. Angew. Math. & Mechanik, v. 5, 1925; v. 20, 1940) and by the Soviet Academicians V. I. Smirnov, S. L. Sobolev, et al. (AN SSSR, Trudy seysmol. in-ta,

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no. 20, 1933). A cylinder is assumed to have a planar deformed state symmetrical relative to a given plane. The cross-sectional contour of the cylinder is assumed to be such that the function r(z) is single-valued for the one-half of the contour that lies on the one side of the oy axis. A body of revolution is then cut out of the cylinder through a rotation of the cross-sectional contour of the cylinder relative to the oz axis. The stress and strain distributions are then superimposed by means of their rotations through an angle π relative to the axis oz, and expressions are found for the components of the axially-symmetrical distribution. Integration is then performed with respect to x instead of θ, and 2 analytical functions of a complex variable are introduced which are represented by Cauchy integrals, whereupon the values of the components of the axially-symmetrical distribution along the contour of the body are expressed by means of the contour values of two integrable analytical functions. A similar reasoning is performed for an elastic space with an axially-symmetrical cavity regarded to be in a axially-symmetrical stressed state. Again, the values of the components of the stressed state on the contour of the body are obtained in terms of the contour values of two analytical functions. If the principal stress vector applied to the contour is zero, the expressions coincide with those found previously. If the representations of the contour values of the components of the axially-symmetrical state are introduced into the boundary conditions of a problem, a system comprising 2 integral equations for the determination of the contour values of the 2 analytical functions is obtained. If the bodies examined are bounded by one or two concentric spherical surfaces, the integral equations obtained are readily solved by power series. Problems regarding bodies of nonspherical form can be resolved readily by the methods of conformal mapping. There are 1 figure and 3 references (1 Russian-language Soviet and 2 German, both identified in the text of the Abstract).